

REMARKS

This is intended as a full and complete response to the Final Office Action dated February 19, 2004, having a shortened statutory period for response set to expire on May 19, 2004. Please reconsider the claims pending in the application for reasons discussed below.

Claims 21-28 and 30-32 remain pending in the application upon entry of this response. Claim 29 has been cancelled. Claims 21, 27 and 31 have been amended. Reconsideration of the rejected claims is requested for reasons presented below.

Claims 21-28 and 30-32 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 21-39 of co-pending U.S. Patent Application Serial No. 10/052,049. A terminal disclaimer is herein attached. Withdrawal of the provisional rejection is respectfully requested.

Claims 21-23, 25-27 and 30-31 stand rejected under 35 USC § 102(e) in view of *Hujanen*, et al., U.S. Patent Publication No. 20020076837, (herein *Hujanen*), on grounds that the claimed process is disclosed by *Hujanen* at figures 3 and 5 and paragraphs 65-68, 73, 74, 79 and 85. Applicant respectfully traverses the rejection.

Hujanen discloses an ALD process for forming a metal oxide layer that may be further reduced by an reductant to form a metal layer. *Hujanen* states, "These four steps are repeated for many cycles until a metal oxide thin film of desired thickness is formed." (paragraph 69). *Hujanen* further states, "After finishing the ALD processing, there are metal oxide layers on the substrate surface. The oxide can be reduced into elemental metal..." (paragraph 70).

Hujanen, alone or in combination, does not teach, show, or suggest a method for depositing a metal-containing film to a substrate within a process chamber by an atomic layer deposition technique, comprising introducing a metal-containing precursor to the process chamber without a gaseous catalyst, absorbing the metal-containing precursor to the substrate, purging the process chamber with a purge gas, introducing a process gas comprising the metal-containing precursor and the gaseous catalyst, reacting the absorbed metal-containing precursor with the process gas to deposit the metal-containing film, and purging the process chamber with the purge gas, as recited in claim

21, and claims 22, 23 and 25-27 which depend thereon. Withdrawal of the rejection is respectfully requested.

Hujanen, alone or in combination, does not teach, show, or suggest a method for depositing a copper-containing film to a substrate within a process chamber by an atomic layer deposition technique comprising introducing a copper precursor to the process chamber, absorbing the copper precursor to the substrate without a water catalyst, purging the process chamber with a purge gas, introducing a process gas comprising the copper precursor and the water catalyst, chemically reducing the absorbed copper precursor with the process gas to deposit the copper-containing film, and purging the process chamber with the purge gas, as recited in claim 27, and claim 30 that depends thereon. Withdrawal of the rejection is respectfully requested.

Hujanen, alone or in combination, does not teach, show, or suggest a method for depositing a copper-containing film to a substrate within a process chamber by an atomic layer deposition technique comprising introducing a copper precursor to the process chamber, absorbing the copper precursor to the substrate, purging the process chamber with a purge gas, introducing a process gas comprising the copper precursor and water, chemically reducing the absorbed precursor with the process gas to deposit the copper-containing film, and purging the process chamber with the purge gas, as recited in claim 31. Withdrawal of the rejection is respectfully requested.

Claims 24, 28 and 32 stand rejected under 35 USC § 103(a) in view of *Hujanen* in view of Nguyen, et al., U.S. Patent No. 5,744,192 (herein *Nguyen*) on grounds that it would have been obvious to use the precursor as disclosed by *Nguyen* with a reasonable expectation of its providing a lower resistivity film with less carbon contamination. Applicant respectfully traverses the rejection.

Hujanen is described and distinguished above. *Nguyen* discloses using Cu(hfac)(TMVS) as a copper precursor during traditional CVD processes.

Hujanen and *Nguyen*, alone or in combination, do not teach, show, or suggest a method for depositing a metal-containing film to a substrate within a process chamber by an atomic layer deposition technique, comprising introducing a metal-containing precursor to the process chamber without a gaseous catalyst, absorbing the metal-containing precursor to the substrate, purging the process chamber with a purge gas,

introducing a process gas comprising the metal-containing precursor and the gaseous catalyst, reacting the absorbed metal-containing precursor with the process gas to deposit the metal-containing film, and purging the process chamber with the purge gas, as recited in claim 21, and claim 24 that depends thereon. Withdrawal of the rejection is respectfully requested.

Hujanen and Nguyen, alone or in combination, do not teach, show, or suggest a method for depositing a copper-containing film to a substrate within a process chamber by an atomic layer deposition technique comprising introducing a copper precursor to the process chamber, absorbing the copper precursor to the substrate without a water catalyst, purging the process chamber with a purge gas, introducing a process gas comprising the copper precursor and the water catalyst, chemically reducing the absorbed copper precursor with the process gas to deposit the copper-containing film, and purging the process chamber with the purge gas, as recited in claim 27, and claim 28 that depends thereon. Withdrawal of the rejection is respectfully requested.

Hujanen and Nguyen, alone or in combination, do not teach, show, or suggest a method for depositing a copper-containing film to a substrate within a process chamber by an atomic layer deposition technique comprising introducing a copper precursor to the process chamber, absorbing the copper precursor to the substrate, purging the process chamber with a purge gas, introducing a process gas comprising the copper precursor and water, chemically reducing the absorbed precursor with the process gas to deposit the copper-containing film, and purging the process chamber with the purge gas, as recited in claim 31, and claim 32 that depends thereon. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the Final Office Action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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